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The correct name of the Iberian Chiffchaff *Phylloscopus ibericus* Ticehurst 1937, its identification and new evidence of its winter grounds

by Lars Svensson

Received 26 April 2001

The Iberian Chiffchaff, whether regarded as a subspecies of Common Chiffchaff *Phylloscopus collybita* or a separate species, has been known as both *brehmii* (Homeyer 1871) and *ibericus* Ticehurst 1937. The current 'official' name is the former; e.g. the Records Committee of the British Ornithologists' Union lists it as Iberian Chiffchaff *Phylloscopus brehmii* (Homeyer) (B O U 2001). However, I demonstrate below that the correct name should be *P. ibericus*.

In recent years, close study of the Iberian Chiffchaff has revealed reasons for it to be treated as a separate species, mainly due to the efforts of Marc Salomon (Salomon

1982, 1987, 1989, 1990, 1997, Salomon *et al.* 1992, 1997), and has indicated criteria for its identification. Salomon *et al.* (1997) described a morphometric formula for separating males of Iberian and Common Chiffchaffs (nominate race). I here propose a different biometric formula to facilitate identification in the hand; I believe this to be more effective and easier to use.

Vocalizations are not treated here; good accounts appear in Glutz von Blotzheim & Bauer (1991), Urban *et al.* (1997), Clement & Helbig (1998), and Svensson *et al.* (1999).

The wintering grounds of the Iberian Chiffchaff have either been largely unknown (Ticehurst 1938, Williamson 1962, Cramp 1992, Baker 1997) or variously given as 'apparently mainly within Iberia at low altitudes' (BOU 2001), 'resident' and 'some move south in winter' (Parmenter 1991). Other authors have suggested that it winters partly or entirely in Africa, though the extent of this was little known: 'the real winter grounds appear to be Maghreb, possibly even further south' (Glutz von Blotzheim & Bauer 1991), 'several indirect lines of evidence suggest that [*P. ibericus*] migrates further than nominate *collybita*' (Salomon *et al.* 1997), 'there are winter records from as far south as Mali and Burkina Faso' (Clement 1995). I give some evidence and reasons for believing that the winter grounds are to be found predominantly in tropical Africa.

Throughout this paper, mention of *collybita* or Common Chiffchaff should be taken to refer to nominate *P. c. collybita*, unless otherwise indicated.

The scientific name

E. F. von Homeyer's original description (1871) of the Iberian Chiffchaff, under the name '*Phyllopneuste Brehmii*', is insufficient and in several vital aspects erroneous, as pointed out by C. B. Ticehurst (1937). von Homeyer described the Iberian Chiffchaff as being considerably smaller than the Common Chiffchaff, with wing ('ulna') only '51–52' (Iberian is actually on average slightly larger); with 'an appearance to have a longer tail' (it has a slightly shorter tail); substantially shorter tarsi (claimed by von Homeyer to be about 20% shorter, whereas, in reality, the two taxa have roughly same length tarsi); 'weaker bill, although of same length' (it has a very slightly stronger and longer bill); and to have 'considerably darker olive-brown upperparts' (classical Iberian are green above and lack brown tinges) and similar colours below as Common Chiffchaff (Iberian is on average cleaner lemon-yellow and white on the underparts). The second outermost primary was described to be short, 'only slightly longer than the secondaries' (it is on average slightly longer than on Common Chiffchaff, substantially longer than the secondaries).

These shortcomings relate to almost every character described. As noted by Ticehurst (1937) this, together with the lack of information about its call or song, makes it impossible to accept the description as anything other than a Common Chiffchaff, even allowing for the brief and incomplete descriptions of the time.

It is clear that von Homeyer was not aware of sexual size dimorphism in Chiffchaffs. The type description most certainly described a (small) female Common Chiffchaff.

Plate 1. a. Iberian Chiffchaff *Phylloscopus ibericus*, 7 April 2001, Der Kaoua Oasis, SE Morocco. Note green upperparts without brown tinge, yellow hue on sides of head, and vivid lemon supercilium above and in front of eye. The sixth outermost primary is clearly emarginated, separating it from Willow Warbler *P. trochilus*. (Lars Svensson). b. Common Chiffchaff *P. c. collybita*, 19 May 1999, near Auch, Gers, SW France. Note brown tinge on greyish-green upperparts, rather dusky sides of head, and lack of strong lemon on supercilium. (Lars Svensson).

von Homeyer did not explicitly state that the description was based on just one type specimen, but it is the only possible way to understand the brief original description. He mentioned that he had received several interesting skins from Portugal through the dealer Mr W. Schlüter in Halle, these having been collected by Dr Rey, and that among these was 'a small leaf-warbler at a quick glance resembling the Common Chiffchaff in some aspects, only being hardly bigger than a Goldcrest'. Although three specimens have later been referred to as types, only one collected prior to the description is known.

The *brehmii* type specimen

E. F. von Homeyer's collection of skins, numbering nearly 7,000, was bequeathed to the Staatliches Naturhistorisches Museum in Braunschweig (SNMB), Germany, including the type of '*Phyllopneuste Brehmii*'. In July 1999, I visited Braunschweig and examined the type specimen, together with other relevant skins. Both plumage and measurements are involved in the separation of Iberian and Common Chiffchaffs and, due to the close resemblance between the two, as many characters as possible must be used in combination in order to obtain a reliable identification.

The type (Braunschweig no. 1287) is without doubt a female Common Chiffchaff *P. c. collybita*. The upperparts have a strong brown wash to the dull green on crown and mantle, and the underparts are both quite dusky (instead of largely whitish in the centre) and slightly tinged brown, with buff on the sides of the head, breast, flanks, and even slightly on the throat. These features exclude the possibility of it being an Iberian Chiffchaff.

The measurements (mm) of the *brehmii* type are: wing 54, tail 42, tarsus 18.6, bill (to skull) 10.8, bill depth (at feathering) 2.2. Wing formula: 1st (outermost) primary (P1) in relation to primary coverts (p.c.) +6.5, P2 in relation to wingtip (WT) –6.5 (and falling between P8/9, near P8), P3 –0.5, P4 0, P5 –0.5, P6 –1, P7 –4, P8 –6, P10 –8.5, 1st (outermost) secondary (S1) –10. P1 < P2 21.

The label, with black ink handwriting by von Homeyer (validated by Manfred Scholz, SNMB) reads: '*Sylvia ~~trochilus~~ Brehmii* ad, Portugal, April 69. Dr. Rey.', and in pencil 'Hartert vind. 1869. typ.'. On the reverse side is printed: 'Wilhelm Schlüter. Naturalienhandlung in Halle a/S. Europa.' In ink handwriting the following is added '1287' and '~~2233~~' and '1.'. In pencil is written 'No 28'.

Since both the description and the type of von Homeyer refer to *P. c. collybita*, the name *Phylloscopus brehmii* (Homeyer 1871) is a synonym of *P. c. collybita*, and the correct name for the Iberian Chiffchaff is *Phylloscopus ibericus* Ticehurst 1937.

It remains here to comment on the examination of the *brehmii* type by G. Niethammer (1963), whose views have subsequently been followed by most authorities and authors. Niethammer did not put forward any convincing reasons for rejecting Ticehurst's new name, and for upholding von Homeyer's. He claimed that the type with its 'saturated upperparts and the vividly yellow on underparts (wing-bend, thigh, undertail-coverts)' was 'typical for the Chiffchaffs of northern Spain' (presumably in error for Portugal or 'Northern Iberia'). Ticehurst's opinion that the *brehmii* type is a

migrant *collybita* was based on the original description and an examination of the type by Dr Steinbacher in Braunschweig at the time. Both were disregarded by Niethammer without any further arguments.

The *brehmii* type is far too brown and buff to be *ibericus*. Vivid yellow hues on the underparts can be found on both taxa. As will be shown below, the biometrics of the type convincingly show it to be *collybita*. We now know that both *ibericus* and *collybita* breed in northern Iberia, and probably did so in the late 19th century, too. Referring to the area of collection is therefore in itself no proof. The date ('April') does not exclude migrants, and the date as given on the label has been questioned––not without reason—based on the rather fresh tips to the primaries (Ticehurst, *loc. cit.*), which are more typical of birds from late autumn or winter.

Vaurie (1954) questioned if this specimen was really the type at all, although it is not clear whether he examined it himself. However, there is no reason to doubt that this specimen is the type. It is still kept in von Homeyer's collection, it is the only one from the type locality Portugal, it has the correct provenance, and it was collected two years prior to the description.

Other specimens referred to as *brehmii* types, or of direct relevance

Two more specimens in the Braunschweig collection emanating from von Homeyer were later designated by E. Hartert as 'duplicate types' (apparently *sensu* syntype) for *brehmii*, and have sometimes been referred to as 'types' in the literature. However, I have not been able to establish why Hartert did this, since he did not accept *brehmii* as a valid taxon (Hartert 1910).

SNMB, no. 6484, Morocco (?), 3 May 1884

The locality for this bird is Morocco according to Ticehurst (1937), though Niethammer (*loc. cit.*) says 'apparently Portugal'. A label with von Homeyer's handwriting in black ink reads: '*P. Brehmii* 6484', and in pencil 'Hartert vind. typ.'. On the reverse side is written in ink 'Mor an works, 3/5/84, female'. In pencil is written '1884'. The specimen is in all respects a typical female *collybita*, with plumage very similar to von Homeyer's *brehmii* type. Measurements: wing 54, tail 44, tarsus 18.8, bill (to skull) 11.0, bill depth (at feathering) 2.1. Wing formula: P1 in relation to p.c. +6, P2 in relation to WT –6 (and falling between P7/8), P3 to P5 0, P6 –1, P7 –5, P8 –7, P10 –9.5, S1 –10.5. P1 < P2 20.

Even if this bird had been an Iberian Chiffchaff, which it is not, it could not serve as a type since it was collected 13 years after von Homeyer published his original description of the taxon, and since the original type is still preserved.

SNMB, no. 2971, Algiers, no date

A label with von Homeyer's handwriting in black ink reads: '*Phyllopneuste ~~rufa~~ Brehmii* Homeyer, Loche, Algier', and in pencil by Hartert 'Hartert vind. typ.'. Finally in pencil by someone else 'Duplic.'. On the reverse side is printed 'Zoologisches Comptoir. Nr.'

and 'Gustav Schneider in Basel', with 'v. Homeyer' stamped in blue ink, '*Phyllopneuste rufa* L, Alg' written in pencil, and no '2971' (or possibly '297i') in ink.

This bird is an Iberian Chiffchaff, apparently collected by a Mr. Loche in the Algerian capital. Most likely it is a worn spring or summer female (although no date or sex are given). It has green upperparts without a brown cast on the crown and mantle (or with the slightest tinge only), and it is dusky oily-grey or off-white below, and with yellow streaks lacking any buff or brown-grey tinge on the throat, breast or flanks. The undertail-coverts are very pale yellow and accordingly there is only a very slight contrast with the whitish centre of the belly (the bird is not entirely typical in this respect, although such variation does occur within *ibericus*). Tarsi are rather pale grey-brown, and the cutting edges of the bill are also pale brown. Measurements: wing 57.5, tail 43, tarsus 19.4, bill (to skull) 12.3, bill depth (at feathering) 2.6. Wing formula: P1 in relation to p.c. +5, P2 in relation to WT –6.5 (and falling between P6/7, near P7), P3 and P4 0, P5 –2, P6 –4.5, P7 –7, P8 –8.5, P10 –10.5, S1 –12. P1 < P2 22.5.

Since von Homeyer specifically mentions that the type is from Portugal, this undated Algerian bird cannot be the type, although it is the correct taxon.

This bird was identified as a Willow Warbler *P. trochilus* by both Steinbacher and, reputedly, Hartert (Ticehurst 1937, although the labels do not indicate this in the case of Hartert). I have more than once been struck by the superficial similarity between Willow Warbler and Iberian Chiffchaff, both in the field and in the hand. However, this particular bird is too small for Willow Warbler (in which a wing of less than 59 mm would be exceedingly rare), it has a distinct (although not deep) emargination on P6 on left wing (P6 of right wing is broken at the base), and the flight-feathers are rather dull brown-grey and worn, not darker and glossier grey with pale tips as usually found on Willow Warblers in most seasons, due to the two complete moults each year in this species. Although I have found a very few Willow Warblers with a slight hint of an emargination near the tip of P6, this bird has a more obvious emargination. Further, Willow Warblers have a longer primary projection, with S1 usually 16–19 mm shorter than wingtip (only 12 mm on this bird), P1<P2 is 26–34.5 (only 22.5 on this bird). P2 can fall between P6/7 in Willow Warbler, but hardly near P7, as on this bird.

BM(NH), no. 1886.7.8.660, El Busseh (Palestine) 7 Dec 1863

I found this specimen at the Natural History Museum, Tring, in a tray with Chiffchaffs unassigned to subspecies or region. It carried three labels, one of which read: '*Phyllopneuste Brehmii* of E. von Homeyer described in Cab. Jour. at the meeting held at Görlitz May 1870.', and on the reverse side: 'Phyl: Tristrami n.s. Mr Brooks'. The second read: 'Sylvia rufa El Busseh 7.12.63. No. Coll. by H. B. Tristram', and on the reverse side in handwriting: 'wing 2 1/8, 2=8, tail 1 7/8'. The third read: '7-12-63', 'Brit.Mus.Reg. 86.7.8.660' and '*Phylloscopus rufus* (Bechst.) Loc. El Busseh, H. B. Tristram' and on the reverse side in black ink: 'Type of *P. tristrami* Brooks fide Dresser P. Z. S. 1872, p. 25.' and 'M 112'. The specimen, which is *collybita*, was exhibited by Dresser (1872) at a meeting in the Zoological Society of London as an example of von Homeyer's Iberian Chiffchaff. It had been found many years previously

by Brooks among warblers sent to him by Rev. Canon Tristram, and Brooks regarded it as a new and undescribed species for which he anticipated the name *Phyllopneuste tristrami*. However, he never published it, and when von Homeyer's *brehmii* Chiffchaff came in print, it was concluded that these two were synonyms, and Brooks never went through with his description. The bird is not sexed but is undoubtedly a female. Measurements: wing 54.5, tail 45, tarsus 18.5, bill (to skull) 11.3, bill depth (at feathering) 2.0. Wing formula: P1 in relation to p.c. +6.5, P2 in relation to WT –6.5 (and falling = P9), P3 –1, P4 and P5 0, P6 –0.5, P7 –3, P8 –5, P10 –8, S1 –10. P1 < P2 22.

The *ibericus* type specimen

For completeness I give here a brief description of Ticehurst's type for Iberian Chiffchaff (*ibericus*) at the Natural History Museum, Tring:

BM(NH) 1934.1.1.5045, male, near Coimbra, Portugal, 23 May 1920.
Decidedly green above, lacking any element of brown. Distinctly streaked yellow below on whitish ground. No buff or grey-brown on breast. Nearly pure white on centre of belly, fairly strong yellow tinge on undertail-coverts. Worn tips to primaries. Measurements: wing 60, tail 46, tarsus 19.7, bill (to skull) 12.2, bill depth (at feathering) 2.7. Wing formula: P1 in relation to p.c. +6, P2 in relation to WT –6.5 (and falling between P6/7), P3 and P4 0, P5 –0.5, P6 –4, P7 –7, P8 –9, P10 –11.5, S1 –12. P1 < P2 23.

Biometry and identification

Salomon *et al.* (1997) discussed the morphometric differentiation of males of Iberian and Common Chiffchaffs. They trapped 25 *ibericus*, 25 *collybita* and 9 'mixed-singers' (presumed hybrids) and analysed a number of variables to derive a discriminant function for the identification of the birds. This function gave a diagnosis error of only 5% (in Salomon 1997, the margin of error is given as 7%), although hybrids would, according to the authors, be difficult to separate from Common Chiffchaff. Hybrids are estimated to constitute 11% of the population in northern Spain and in the extreme southwest corner of France (Helbig *et al.* 1996).

The discriminant function reads: (0.283 x wing length) – (0.036 x P10) + (0.269 x wing pointedness index) + (0.31 x tarsus) = 26.4. Values above 26.4 would indicate Iberian Chiffchaff males, values below 26.4 Common Chiffchaff males. The wing pointedness index was derived by dividing the distance between tips of P3 and P10 by wing length x 100. Elsewhere in the formula P10 was measured as the distance from the tip of this feather *to the wingbend* (and not, as is more commonly done, expressed as the difference between the tip of this feather and the wingtip, Salomon *in litt.*). Thus, although P10 appears twice in the formula, it is measured differently in these two functions.

I tested this formula on samples of 30 male Iberian Chiffchaffs and 76 male Common Chiffchaffs. These consist mainly of specimens examined in Tring, New York, Paris, St. Petersburg, Stockholm and Braunschweig (Appendix 1) but also include a few live

birds from W Pyrenees and SW France. Live birds were generally identified by song before capture, and the identification was later confirmed by analysis of mitochondrial DNA (cytochrome b) from feather samples. For several museum specimens of *ibericus*, the labels contain information about the peculiar song, providing a confirmation of the identification. I have also carefully examined the colouration and biometry of the two taxa from single-species breeding sites and from this determined what I believe to be the most reliable ways of identifying birds in the hand.

Male Iberian Chiffchaffs in my material had a discriminant function range of 24.88–27.60 (*mean* 26.3) and the male Common Chiffchaffs 23.62–26.79 (*mean* 25.5), and with as many as 86% falling in the overlap range 24.88–26.79. Note that the mean value for *ibericus* in my sample falls *below* the discriminant value as given by Salomon *et al.* (1997).

The large difference between the results of Salomon *et al.* (1997) and of my own calculations is difficult to explain. My sample may have been biased by the inclusion of a few wrongly sexed females, whereas Salomon *et al.* used only live singing males, which were tape-lured and trapped. However, the proportion of wrongly sexed skins in museum collections is thought to be rarely higher than 5–15%, this based on the views of taxidermists and my own experience from 35 years with research in museum collections. Also, in this case several of the *ibericus* labels included remarks about the 'peculiar song' or of 'testes large', etc. It is thus fair to assume that wrongly sexed specimens in my material make up less than 5%. And even if a few females appeared in my material, it could hardly explain the markedly different results.

Another possible explanation is that my material includes mixed-singers (hybrids) and that these confuse the results. However, if no more than 11% of the Iberian Chiffchaffs in the limited area of overlap are such birds, my material of Iberian Chiffchaffs assembled from the entire range (cf. Appendix 1), and not just from the zone of contact, should have no more than one or two such birds. Hence, this does not seem likely either.

A third possible reason for such a substantial difference in results could be differing measuring methods, or the fact that a majority of the birds in my sample were skins. Since I have a long experience of measuring both live birds and skins, and since many ringers and taxonomists apply and refer to measuring techniques which I have laid out (Svensson 1992), my results should be fairly accurate, or at least possible to duplicate by others. The wing length of skins are known to shrink by about 1–3% when the skins dry. Well prepared skins of small warblers produce very nearly the same or only slightly smaller measurements than live birds. A loss of 0.5 or 1 mm in wing length would not affect the above calculations at a level which could explain the different results.

An alternative formula

The discriminant formula by Salomon *et al.* (1997) did not work well on my material.

With ringers and field workers in mind, I have derived an alternative discriminant formula which would require a minimum of training in mathematics and not even require the use of a calculator. The formula was calculated by adding seven values which tend to be larger in Iberian Chiffchaff and subtracting two which seem to be smaller on average compared with Common Chiffchaff to give a *multiple character value* (MCV).

To arrive at MCV, **add** wing length, bill length, distance P1–P2, distance wingtip (WT)–P6, distance WT–P7, distance WT–P10, distance WT–S1, and **subtract** tail length and distance P1–tips of primary coverts (p.c.). As a brief formula, this works out as: MCV = W + B + (P1<P2) + (P6<WT) + (P7<WT) + (P10<WT) + (S1<WT) – T – (P1>p.c.). Wing length is measured according to 'method 3' (Svensson 1992), and the bill is measured to the skull.

I deliberately avoided the use of tarsus length as a variable (*contra* Salomon *et al.* 1997) since I found this to be nearly the same in *ibericus* and *collybita* across its range (see Table 1 and 2). However, Common Chiffchaffs breeding in south-west France, i.e. closest to *ibericus*, tend to have slightly longer tarsi (*mean* 20.13 mm in ten males) than those in other parts of Europe (N France, Germany, *mean* 19.64 in 53 males), and indeed longer than in *ibericus* (*mean* 19.64 mm in 33 males). I therefore recommend that tarsus length should be included when comparing breeding *ibericus* with local Common Chiffchaffs.

For males, the discriminant MCV is 73.2. 89% of *ibericus* males had values higher than 73.2, and all *collybita* males had lower values. The overlap area is 71.9–73.2, within which 11% of the males of both taxa combined fell.

Even for females the MCV gave some guidance. I checked it against 16 *ibericus* and 39 *collybita* females. The discriminant value for females is 70.9. All the female *collybita* had values lower than 70.9, whereas nine of the 16 female *ibericus* (56%) had higher values. There is a large overlap area between 61.0–70.9 where 62% of the females of both taxa combined fell. For the present sample, this gives a far better separation than the formula of Salomon *et al.* (1997).

MCV was calculated for the *brehmii* type specimen and shown to be 60.8. This confirms that the *brehmii* type is a *collybita*, the MCV falling just short of the minimum value for Iberian Chiffchaff females. Also, on the *brehmii* type, P2 falls between P8/9, which only occurs in Common Chiffchaff, not in Iberian Chiffchaff.

The correct identity of the *ibericus* type as an Iberian Chiffchaff was also confirmed by its MCV of 77.7.

It is worth noting that some females of the Fenno-Scandian Chiffchaff *P. c. abietinus* can match the MCV and biometry of a male Iberian Chiffchaff. Particularly brightly coloured *abietinus* are therefore a potential pitfall. Generally, though, colouration should help avoid this mistake: *abietinus* has slightly paler and more greyish-green upperparts (not such a saturated moss green colour), some buff or brownish tinges on sides of head, neck and breast, less vividly yellow supercilium

TABLE 1

Summary of biometry of *Phylloscopus ibericus* Ticehurst 1937.
Measurements (mm): range, **mean** and sample size given for all data except wing formula and tail/wing and bill/wing ratios.

	Males	**Females**
Wing	56-64, **61.02**, 33	54-59, **56.38**, 16
Tail	42.5-52, **47.32**, 33	41-48, **44.22**, 16
Tarsus	17.9-20.7, **19.64**, 33	17.6-19.0, **18.51**, 15
Bill (to skull)	10.4-13.3, **12.06**, 31	11.1-12.3, **11.78**, 15
depth (at feathering)	2.1-2.8, **2.51**, 33	2.2-2.7, **2.42**, 16
P1>p.c.	2-8, **5.83**, 33	4-6.5, **5.22**, 16
P2=WT	5-8, **6.48**, 32	5.5-7.5, **6.34**, 16
P2 =	=7/8 44%, =6/7 32%, =7 9%, =8 6%, =6 6%	=7/8 46.5%, =8 33.5%, =6/7 13.5%, =7 6.5%
P3=WT	0-1	0-1.5
P5=WT	0-1.5	0-2.5
P6=WT	1.5-6.5, **3.55**, 28	1.5-4, **2,5**, 12
P7=WT	4-8, **6.24**, 27	3.5-6.5, **5.46**, 12
P8=WT	6-10, **8.46**, 26	6-8.5, **7.33**, 12
P10=WT	9.5-13.5, **10.89**, 28	7.5-11, **9.88**, 12
S1=WT	10-14, **12.20**, 28	9.5-12.5, **11.18**, 14
P1<P2	22-29, **25.23**, 30	20.0-25.5, **22.72**, 16
Tail/wing x100	69.5-83.3, **77.56**, 33	75.0-82.5, **78.41**, 16
Bill/wing x100	17.6-21.2, **19.73**, 33	19.8-22.4, **20.95**, 15
MCV	71.9-89.2, **75.9**, 26	61.1-79.7, **70.5**, 16

and undertail-coverts, and the legs are on average slightly darker.

Plumage and bare parts characters

If the MCV as described above is combined with a careful analysis of plumage and bare part characters, it will be possible to identify even more birds without the help of song or calls. The following criteria should be helpful:

(1) Colours of upperparts are generally more indicative than colours of underparts. As a rule, the entire upperparts of *ibericus* are purer moss green than on Common Chiffchaff, lacking the brown tinge on crown and mantle usually present in *collybita* (Plate 1). When compared with other species within *Phylloscopus*, the upperparts of the Iberian Chiffchaff are about as green as in Wood Warbler *P. sibilatrix* and almost a more saturated green hue than in Willow Warbler, although Willow Warblers and Iberian Chiffchaffs can appear quite similar.

Note that in freshly moulted plumage in early autumn a *very slight* brownish tinge can be found on the greenish upperparts of some Iberian Chiffchaffs. This brown element, if at all present in autumn, seems to fade, presumably by bleaching, much quicker than the green colours, and in spring there should be no brown trace left.

TABLE 2

Summary of biometry of *Phylloscopus c. collybita* Vieillot 1817.
Measurements (mm): range, **mean** and sample size given for all data except wing formula and tail/wing and bill/wing ratios.

	Males	**Females**
Wing	56-64, **60.07**, 92	52.5-60, **55.84**, 37
Tail	42.5-52.5, **47.82**, 92	41-51, **44.27**, 37
Tarsus	17.9-21.0, **19.60**, 92	17.4-20, **18.49**, 36
Bill (to skull)	10.4-12.7, **11.75**, 88	10.7-12.3, **11.65**, 34
depth (at feathering)	2.0-2.8, **2.45**, 85	2.0-2.6, **2.37**, 35
P1>p.c.	4-10, **6.57**, 92	3.5-9, **5.95**, 37
P2=WT	4.5-8.5, **6.18**, 91	4.5-7.5, **5.95**, 37
P2 =	=7/8 53.4%, =7 16.5%, =8 11%, =8/9 9.6%, =6/7 5.5%, =9 4%	=7/8 37.2%, =8 18.6%, =8/9 14%, =7 9%, =9 9%, =6/7 7%, =9/10 2.3%, =10 2.3%
P3=WT	0-1	0-0.5
P5=WT	0-1	0-1
P6=WT	1-6, **2.19**, 81	0.5-4, **1.72**, 29
P7=WT	3-8, **4.95**, 82	3-6.5, **4.40**, 30
P8=WT	5-10, **7.14**, 81	4.5-8.5, **6.37**, 30
P10=WT	8-13, **9.93**, 78	7.5-11, **9.22**, 30
S1=WT	9.5-14, **11.22**, 81	8.5-12.5, **10.60**, 31
P1<P2	20-29, **23.60**, 89	19-25, **22.00**, 37
Tail/wing x100	73.2-86.4, **79.60**, 92	75.0-85.0, **79.27**, 37
Bill/wing x100	17.6-21.6, **19.58**, 88	19.3-22.4, **20.91**, 34
MCV	59.7-73.2, **67.8**, 75	56.4-70.8, **63.9**, 39

(2) Whereas Common Chiffchaff generally has a fairly obvious element of buff and brown tinges on ear-coverts, sides of neck, and admixed with the yellow on much of the breast, or at least on sides of breast, and on flanks and sometimes on undertail-coverts, Iberian Chiffchaff is more tinged yellowish-green on sides of head and neck, and has no buff or brown hues at all, or *only very little of it behind the eye and on ear-coverts*. The breast is whitish with clear yellow streaking. It may be possible in fresh autumn plumage to detect on some Iberian Chiffchaffs a *very slight* brownish tinge on the extreme sides of neck and breast.

Many worn breeding Common Chiffchaffs lose most of the buff and brown elements on the underparts by May or June due to wear and bleaching, and become progressively more similar to Iberian Chiffchaffs. Most attention should be paid to upperpart colouration, and identification will be most reliable when based on a combination of as many characters as possible.

(3) Typically, Iberian Chiffchaff has vivid lemon yellow undertail-coverts, contrasting with a rather whitish centre to the belly. Such a contrast is occasionally met with in Common Chiffchaff too, but as a rule the latter has not as pure whitish on the belly, nor has it quite as deep yellow on the undertail-coverts. Some Iberian

Chiffchaffs lack the vivid yellow on the undertail-coverts, but they are at least pale yellow and never tinged buffish.

(4) The supercilium of Iberian Chiffchaff is on average more pronounced and more vividly yellow, particularly in front of and above the eye, than on Common Chiffchaff. Since it is an average difference only, it follows that this is less marked on some birds.

(5) On average, the legs are a trifle paler brown on Iberian than on Common Chiffchaff, though many are alike. It should be noted that *collybita* in southern France tends to have slightly paler legs than North European breeders.

(6) The bill in Iberian Chiffchaff is very slightly stronger than in Common Chiffchaff, meaning that it is easier to see a little flesh-colour along the cutting edges and on the base of the lower mandible on Iberian than on the average Common Chiffchaff. There is much overlap, though, and this is therefore of limited value.

Behaviour as a means of identification?

Both Common and Iberian Chiffchaffs share a habit of quickly dipping their folded tail down from the normal position. This is done frequently when they move in the canopy or on low branches in the open. Some birds do it more than others, and the frequency seems to vary with the mood of the bird. Still, this is a rather distinctive and constant habit of both species.

It is not, on the other hand, seen in the Willow Warbler, which instead flicks both wings and at the same time moves the tail sideways, or half-opens the tail quickly as the wings are flicked. Occasional Willow Warblers dip their tails, but this is far from normal behaviour.

Since Iberian Chiffchaffs are most like Willow Warblers in the field, with similar pure green upperparts and clean yellow and white underparts, it is—perhaps surprisingly—these two which are most difficult to separate. It is here the different tail and wing movements can be used as a guide. A green-mantled Willow Warbler-like bird which is tail-dipping should be checked very closely. Supplementary characters are then for the bird to be not too large, to have slightly brownish and worn primary tips in spring, and not to have too prominent a primary projection. If the supercilium is vividly lemon yellow in front of and above the eye, this will support the identification as Iberian Chiffchaff.

Wintering area

There seems to be very little evidence for Iberian Chiffchaff to be resident in Iberia, although this is still implied by some authors (see above), at least as a partial strategy. These statements seem to rely on a few older field records. There is to my knowledge not one single specimen of Iberian Chiffchaff collected in winter from the Iberian peninsula. Confirmed winter records are therefore needed. Both the Spanish and the Portuguese atlases (Purroy 1997, Rufino 1989) are vague when discussing the Iberian Chiffchaff's winter where-abouts.

With the similarity between Iberian and Common Chiffchaffs, and the lack of knowledge of how to separate them which prevailed less than ten years ago, field records must be treated critically. Even with a better understanding, the two taxa are so similar that trapping or collecting appear to be the only reliable ways to identify silent birds, save the few instances when an observation is both prolonged and made under ideal circumstances. (See above about behaviour, and below.)

As Salomon *et al.* (1997) pointed out, several lines of evidence suggest that the Iberian Chiffchaff migrates further than the Common Chiffchaff. The former has a longer and slightly more pointed wing than its close relative in France, yet it breeds to the south of it. This suggests a longer migration, since a more pointed wing is generally associated with a longer migration (Rensch 1938, Kipp 1958). It also seems to arrive later in spring than Common Chiffchaff.

Thonnérieux (1983) described a bird singing like an Iberian Chiffchaff in winter in South Volta, Ghana. There is also an unpublished record of Iberian Chiffchaff from tropical Africa (Morel, in Salomon *et al.* 1997), which I have not been able to check, and Clement (1995) mentions wintering in Burkina Faso.

The following records are relevant. In Muséum national d'Histoire naturelle, Paris (MNHN), I found two Iberian Chiffchaffs labelled as Common Chiffchaffs, collected in tropical Africa:

MNHN 1933.1927. Niger River, between Massina ('Ké Masina') and Ségou, Mali, 4 Feb 1932, male. Wing 63.5, tail 48.5, tarsus 20.0, bill (to skull) 13.2, bill depth (at feathering) 2.4. Wing formula: P1 > p.c. +7, P2 < WT –6.5 (and falling between P7/8), P3 and P4 0, P5 –1, P6 –2.5, P7 –5.5, P8 –8.5, P10 –11.5, S1 –13. P1 < P2 24. Colouration: pure lemon streaking on throat/breast, and strong lemon on flanks and undertail-coverts. Yellowish hues on sides of head. There is a faint brownish cast in the strong green colour above (crown, mantle), but this might be normal for winter plumage (which is poorly known). It is certainly less brownish than most *collybita* in winter plumage. MCV 77.7.

MNHN 1995.208. Bamako, Mali, Dec 1955, not sexed but unquestionably male on size. Wing 64, tail 44.5, tarsus 18.8, bill (to skull) 13.3, bill depth (at feathering) 2.7. Wing formula: P1 > p.c. +5.5, P2 < WT –7 (and falling between P7/8), P3 and P4 0, P5 –1.5, P6 –3.5, P7 –6, P8 –8, P10 –10, S1 –11.5. P1 < P2 27. Comments regarding plumage as for preceding specimen. MCV 85.3.

In late March and early April 2001 I visited Morocco together with Andrew Lassey and Mike Pearson. In southern Morocco, we observed several migrant Iberian Chiffchaffs. These were identified on size, plumage and behaviour (see above). Only birds seen very close in good light and for longer periods are listed below. Several others were probably also Iberian Chiffchaffs but were not seen close or long enough to confirm identification. All birds could be compared with either or both Common Chiffchaff and Willow Warbler, and some with Western Bonelli's Warbler *P. bonelli*. One Iberian Chiffchaff was trapped to confirm our identifications in the field (Plate 1). The birds seen were as follows: 27 Mar 2001, Marrakech, three Iberian Chiffchaffs seen; 4 Apr 2001, Der Kaoua oasis on the Erfoud–Merzouga track, SE Morocco, one

male Iberian Chiffchaff trapped (Plate 1a), DNA analysis later confirmed the identification; 7 April 2001, Oued Massa, SW Morocco, two Iberian Chiffchaffs seen.

These observations seem to support the view that the Iberian Chiffchaff is a long-distance migrant which winters primarily in tropical Africa. The migration through Morocco in late March and early April may prove to be regular with concerted observation.

That some birds may spend the winter north of Sahara is indicated by a specimen in Paris (MNHN 1967.575) collected in Redeyef in west central Tunisia (west of Gafsa) on 12 Jan 1955. Some uncertainties regarding the wintering area obviously remain.

Acknowledgements

I thank Professor Alf Johnels for inspiring me (without the proper background) to attempt a few taxonomic works, and the Signhild Engkvist Fund for generous support. Thanks are due to the staffs at various museums who enabled me examine the relevant specimens: Per Ericson and Göran Frisk (Stockholm), Vladimir Loskot (St. Petersburg), Robert Prýs-Jones and Frank Steinheimer (Tring), Manfred Scholz (Braunschweig), Paul Sweet (New York) and Claire Voisin (Paris). I am grateful to Andrew Lassey and Mike Pearson for company and help with fieldwork in Morocco. Urban Olsson, University of Gothenburg, kindly analysed several feather samples for DNA. Dr Alan Knox and Dr David Parkin read the first draft of the manuscript and suggested numerous improvements for which I am much indebted.

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Appendix 1

Examined specimens considered to be *P. ibericus* and used for this paper:

BM(NH), Tring: 1886.7.8.622 (Gibraltar 3 Apr); 1925.7.15.12 (Algarve, Portugal, 30 May); 1934.1.1.5028 (Coimbra, Portugal, 23 May); 1934.1.1.5029 (Coimbra 23 May); 1934.1.1.5030 (NW Spain 30 Sep); 1934.1.1.5043 (R'Hira Ammam, Algeria, 1 May); 1934.1.1.5044 (Algeciras, Spain, 30 March); 1934.1.1.5045 (near Coimbra 23 May; the type); 1934.1.1.5046 (Coimbra 23 May); 1934.1.1.5047 (N Portugal 27 May); 1934.1.1.5048 (Algarve 18 May); 1941.5.30.4795 (Sesombres, Portugal, 14 Apr); 1941.5.30.4796 (Coimbra 23 May); 1941.5.30.4797 (Galicia, Spain, 19 May); 1941.5.30.4798 (Jesus, Braga, Portugal, 27 Apr); 1941.5.30.4799 (Setubal, Portugal, 20 Apr); 1947.4.394 (Pau, France, 20 Apr); 1949.Wh.1.1.2.242 (Setubal 18 Apr); 1949.Wh.1.1.2.243 (Algarve 10 Apr); 1949.Wh.1.1.2.244 (S. Antonio 9 Apr); 1949.Wh.1.1.2.245 (Cizimbra, Portugal, 4 May); 1949.Wh.1.1.2.246 (Jesus 28.4); 1949.Wh.1.1.2.247 (Vigo, Spain, 8 May); 1965.M.14.232 (Gavarnie, France, 11 Sep);

1965.M.14.233 (St. Sauveur, France, 14 Apr).

MNHN, Paris: 1933.1977 (Massina, Mali, 4 Feb); 1967.575 (Redeyef, Tunisia, 12 Jan); 1978.1250 (Ibardin, France, 9 May); 1978.1251 (Ibardin 4 May); 1978.1252 (Ascain, France, 8 Jul); 1978.1254 (St. Jean de Luz, France, 3 May); 1978.1257 (St. Jean de Luz 6 Apr); 1978.1258 (St. Jean de Luz 24 May); 1978.1260 (St. Jean de Luz 17 May); 1978.1262 (St. Jean de Luz 15 Jun); 1978.1263 (Hendaye, France, 26 May); 1978.1269 (Ibardin 4 May); 1995.208 (Bamako, Mali, Dec); 1999.664 (Aya, Quipúzcoa, Spain, 20 May); 1999.665 (no loc., presumably autumn).

AMNH, New York: 449.442 (Ahouraima, Spain, 3 Jun); 449.450 (Algeciras, Spain, 2 Jun); 449.451 (Algeciras 2 Jun); 449.452 (Algeciras 4 Jun); 449.453 (Algeciras 30 Apr); 449.454 (Algeciras 29 Apr).

SNMB, Braunschweig: 2971 (Algiers, presumably spring).

Specimens labelled *ibericus* (or *brehmii*) but either misidentified or considered not convincingly identified, and hence not included in this study as *ibericus*:

SNMB 1287.20.1. Portugal, April 1869. *P. c. collybita*. Treated extensively in the main section.

SNMB 6484. Morocco (?), 3 May 1884, female. *P. c. collybita*. Treated extensively in the main section.

BM(NH) 1877.10.23.27. Morocco, no date, probably female. Identification uncertain, being very slightly tinged brown on a tiny portion of mantle (partly due to missing feathers so that the brown colour of the feather bases is more exposed), and on sides of breast. Also, biometry not diagnostic. Nevertheless, has a close similarity to female *ibericus*. MCV 64.2.

BM(NH) 1881.5.1.856. Tangier, no date or sex. Identification uncertain due to faint buff hue on sides of breast and throat, but biometry and rest of plumage strongly favour normal *ibericus*. MCV 77.1.

BM(NH) 1924.12.18.349. N Biskra, N Algeria, possibly 6 Jan 1912, but month ambiguously noted on label. A controversial bird, being very slightly tinged buff-brown on breast. Also, biometry is less typical. All the same, has a close similarity to female *ibericus*. MCV 64.2.

BM(NH) 1949Wh.1.1.2.234. Gavarnie, French Pyrenees, 10 Oct 1929, female? Quite fresh, but tail feathers pointed and slightly worn. Plumage colours very close indeed to *ibericus* (but slight buff tinge to lower flanks/upper vent). MCV 65.2.

AMNH 449.493. Canterets, C Pyrenees, France, May 1905, no sex but male according to size. Very similar to *ibericus*, but undertail-coverts not as deep yellow as in many (though certainly could pass for one), centre of belly not as pure white. Could be a hybrid, but biometry suggests *ibericus*. MCV 76.9.

MNHN 1960.3931. Djasset, Sahara, 16 Nov 1959, female. Exact locality not identified. Not convincing, has faint buff tinge (including on breast) and rather pale greyish-green tinges above. If sex correct then probably *abietinus*. Wing 62. MCV 77.9.

ZI, St. Petersburg 101.388. Spain, 27 May 1882, female. Biometry not conclusive for *ibericus*, and plumage intermediate: underparts without buff (except very slight tinge on sides of breast), streaked pale lemon on whitish ground. However, belly not whiter, and undertail-coverts not particularly strong lemon. Sides of head rather buffish-tinged. Crown and mantle greenish with a slight brown cast. This plumage could fit both taxa. MCV 65.3.

ZI, St. Petersburg 101.389. Morocco, 16 May 1885, female. Identity uncertain; very slightly tinged buff-brown on sides of breast, and a faint brown hue on crown and mantle, although these are rather green and could fit *ibericus*. Biometry intermediate. Probably female *ibericus*, but perhaps best to add a question mark. (A Schlüter skin, thus provenance not entirely reliable.) MCV 61.8.

ZM, Copenhagen 65.479. Almeria, S Spain, 11 Mar 1966, female. May be a pure *ibericus*, but comparison should be made with a series. Sides of head and flanks have a little grey-brown wash, else only white and lemon yellow beneath. Quite green above except that crown has faint brown tinge. MCV 68.9.